CLAIMS

We claim:

1. In a base station wideband transceiver capable of operating in a wireless cellular communications system that communicates with mobile subscribers, a method for equalization in transmit and receive levels, comprising the steps of:

assigning a plurality of transmit and receive carrier frequencies to the base station wideband transceiver; and

flattening the power in the plurality of transmit and receive carrier frequencies in the base station wideband transceiver using software amplitude pre-distortion.

2. The method according to claim 1, wherein the step of flattening further comprises the step of discretely flattening the power in each of the plurality of transmit and receive carrier frequencies to provide one nominal output level for a predetermined input level for each transmitted or received RF carrier.

3. The method according to claim 1, wherein the step of flattening using software amplitude pre-distortion further comprises the step of applying a series of flattening coefficients to the receive and transmit signals to compensate for at least the effects of a digital-to-analog converter in the base station wideband transceiver.

4. The method according to claim 1, wherein the step of flattening using software amplitude pre-distortion further comprises the step of compensating for narrowband IF ripple and filter roll-off distortion.

5. The method according to claim 4, wherein the step of flattening using software amplitude pre-distortion further comprises the step of compensating for wideband RF ripple and filter roll-off distortion.

6. The method of claim 1, wherein the method further comprises the step of making narrowband IF channel measurements using an automated broadband radio frequency transceiver test (ABRFTT) to determine a set of coefficients for each narrowband IF channel.

7. The method of claim 6, wherein the ABRFTT further comprises the step of making wideband RF channel measurements that step through the wideband bandwidth to determine a set of coefficients for the wideband RF channel.

8. The method of claim 7, wherein the ABRFTT creates 25 narrowband coefficients for a 5 MHz IF bandwidth and 300 wideband coefficients for a 60 MHz RF bandwidth having 200 kHz channels.

9. The method of claim 7, wherein the method further comprises the step of storing the coefficients in a memory in the base station wideband transceiver enabling the interchangeability of base station wideband transceivers within the wireless cellular communication system.

10. The method of claim 9, wherein the method further comprises the steps of storing the wideband coefficients and the narrowband coefficients in a look-up table in memory within the base station wideband transceiver.

11. The method of claim 7, wherein the method further comprises the step of setting a corresponding gain for each individual radio frequency based on the narrowband IF and wideband RF coefficients determined from the automated broadband radio transceiver test.

12. A broadband radio frequency base transceiver capable of receiving and transmitting simultaneously on multiple frequencies, comprising:

a receiver coupled to an plurality of analog-to-digital converters, wherein the analog-to-digital converters provide a plurality of digitized signals;

a transmitter coupled to a digital-to-analog converter, wherein the digital-to-analog converter produces an analog signal from a multi-channel digital combiner; and

at least one digital signal processor programmed to discretely flatten the power in each of the plurality of transmit and receive carrier frequencies using software amplitude pre-distortion.

13. The broadband radio frequency base station transceiver of claim 12, wherein the receiver has a receiver digital signal processor that applies a series of flattening coefficients to the receive signal to compensate for the effects of the wideband RF and narrowband IF ripple and filter roll-off distortion.

14. The broadband radio frequency base transceiver of claim 12, wherein the transmitter has a transmitter digital signal processor that applies a series of flattening coefficients to compensate for the effects of the digital-to-analog converter.

15. The broadband radio frequency base transceiver of claim 12, wherein the transceiver further comprises a transceiver microprocessor module having memory for storing a plurality of wideband RF and narrowband IF coefficients for setting a corresponding gain for each individual frequency.

16. The broadband radio frequency base transceiver of claim 12, wherein the transceiver is a translating repeater.

17. A wireless cellular communications system with improved equalization in transmit and receive levels, comprises:

a plurality of wideband transceivers communicating with mobile subscribers, wherein a plurality of transmit and receive carrier radio frequencies are assigned to the plurality of wideband transceivers, each of the wideband transceivers comprises:

a receiver coupled to an plurality of analog-to-digital converters, wherein the analog-to-digital converters provide a plurality of digitized signals to a corresponding plurality of digital channelizers;

a transmitter coupled to a digital-to-analog converter, wherein the digital-to-analog converter receives an analog signal from a multi-channel digital combiner;

a first digital signal processor programmed to discretely flatten the power in each of the plurality of receive carrier frequencies using software amplitude pre-distortion; and

a second digital signal processor programmed to discretely flatten the power in each of the plurality of transmit carrier frequencies using software amplitude pre-distortion.

18. The wireless communication system of claim 17, wherein each of the plurality of wideband base transceivers is a translating repeater.